

Gadgets News-Herald

"My, my, hey, hey, oh-oh is here to stay"

Number Five

Spectre 3.0

The Best Mac Emulator Gets Even Better

It's here! The premier Mac™ Emulator, Spectre 128™/Spectre GCR™, has a *major* new software release, 3.0, with something for everyone. Spectre 3.0 is the result of months and months of work by the Gadgeteers on making the Spectre more powerful, more compatible, and all around more useful for you.

We've made major strides in fixing the few remaining snags in Mac software; we've added 68030 support, both for the Gadgets 68030 SST and for the Atari TT; and we've added important support for overseas users, in the form of easily changeable menus and keyboard configurations.

We think you'll find Spectre 3.0 to be easily the most powerful Mac emulator ever. It's easier to set up, to use, it runs more Mac software, and it's even faster.

The last major release of Spectre was 2.65 (2.65C for color monitors), in March 1990. Now 2.65 was a very good release and we're proud of it. However, there were some things 2.65 was unable to do, as we noted at the time of its release. So, over the last six months, we've tracked down many bugs (both in our own and in Mac software), fixed them, and added some major new capabilities to Spectre as well.

SPECTRE 3.0: NEW STUFF (A DIVISION OF GADGETS)

MEGATALK SUPPORT: We now have full MegaTalk support included in Spectre; you didn't notice it, but 2.65 had limited MegaTalk support software built in. Now it's all there.

SERIAL: There's an interesting point here; with a MegaTalk plugged in, you have two MegaTalk ports, the Atari serial port, the Atari parallel port, and the Atari laser printer all available, but the Mac only understands two output devices ("modem" and "printer"). You have to pick either Atari ports or Mac ports. So if you select MegaTalk for your printing/serial needs, the Atari ports are automatically deselected, to prevent crashing the Mac operating system, which only understands two ports.

You can now *plug right into* an established AppleTalk/LocalTalk network and immediately start using it, like any Mac. For instance, while writing this, I brought it over from a Mac II using "TOPs", a neat networking program, to my Atari Mega-4, saved it, edited it, then printed straight to an Apple LaserWriter II NTX, all via AppleTalk/LocalTalk.

Technowords: "AppleTalk" used to



33 MHZ
MEGA-12
...PAGE 3

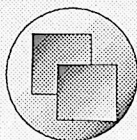
mean the physical connection between machines. Then that was changed to "LocalTalk", and a higher speed connection, called "EtherTalk", was added to the product line. Both of them were then lumped under "AppleTalk". Many people still call LocalTalk "AppleTalk", so I mention them both to avoid confusion.

SCSI: In terms of SCSI, Spectre will detect and use any Mac hard disk on the MegaTalk SCSI bus, booting from each of them just as a Mac would (Mac hard disks get priority over Atari hard disks, which is something we may make selectable in Spectre 3.1). In addition, SCSI devices like hand scanners and Mac CD-ROM disk players work just fine; we support them as well (we tried ThunderWare's LightningScan, very similar to MiGraph's Atari hand scanner). Nothing special is required; you just plug them in.

Imagine literally going into an office full of Macs all hooked together with LocalTalk, using SCSI devices, unplugging the cables from a Mac and removing it, then putting an Atari in its place, plugging all the cabling back in, and starting up into Mac mode. With MegaTalk, you can do this! And you get all the advantages of Spectre. If you're replacing a Mac Plus™, you'll gain 20% speed (more with an accelerator installed, or a TT), a 30% bigger screen (great for page layout!), and a three times faster hard disk!

Since LocalTalk/AppleTalk is among the largest installed base of computer networks in the *world*, this opens your Atari up to a whole new world. We urge you to check out MegaTalk and see if it fits into your situation.

Gadgets by Small, Inc.



40 W. Littleton Blvd., #210-211 • Littleton, Colorado • 80120
Phone: (303) 791-6098 • Fax: (303) 791-0253

CONTINUED ON PAGE 6

In This Issue

Spectre 3.0 New Stuff.....1	
MegaTalk Support.....1	
The New Menus.....6	
68030 Support.....7	
Disk Drive Improvements.....8	
Laser Printers.....9	
The Amazing Uncrasher.....9	
Keyboard Improvements.....10	
Vertical Blanks.....10	
A "Free" 64K.....11	
ZeroStore Additions.....11	
Overseas Users.....11	
System 6.0.6, 6.0.7.....12	
Spectre 3.0 Fixes & Repairs.....12	
System 6.0.4, 6.0.5 Fixed.....12	
Sound Manager Fixed.....12	
Serial Driver Improved.....12	
Restart Works.....12	
64K Rom Support Gone.....12	
MegaTalk.....2	
68030 SST.....3	
What Slows Down an Atari.....3	
The Soul of the Machine.....4	
How Many Mhz.....5	
What's on the Board.....5	
Installing the 68030 SST.....6	
Ordering Information.....13	
"Classifieds".....13	
Next on the Agenda.....14	
Compatibility List.....14	

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Spectre Demo Contest

We are having a contest for the ultimate Spectre Demo, and *you* can help us (and you) out! First prize is a 68030 SST Basic Package with Option A. Here are the requirements:

- Must be a "stand alone" ST Program
- Must run in ST mode without a GCR or Spectre cartridge installed. (128K Roms on disk are not allowed!)
- Monochrome only is OK, color and Mono preferred
- Sound would be nice

Entries for the contest must be received by 4/1/91; all entries become the property of Gadgets by Small, Inc. Decision of the judges is final. Example Demo (for Aladin) and entry form available upon request.

MegaTalk

The Fastest Communications Board Ever Done for Your Atari Mega ST: Serial & SCSI

The Gadgets MegaTalk board is a multifunction expansion board for Atari Mega ST computers. MegaTalk plugs into the Mega's expansion slot, has two serial ports, and a Mac SCSI port. As the name implies, it lets your Mega *talk* in ways it could never talk before.

A TARI MODE SERIAL APPLICATIONS: The MegaTalk board gives you two more serial ports in your ST. With our fully compatible MegaTalk BIOS drivers, you can connect up to three serial devices to the ST *at the same time*. For instance, using Strata Software's fine STalker™ desk accessory, we've connected three modems to one ST, and connected to CompuServe™, GENie™, and BIX™ – all at the same time! It's easy to upload and download files simultaneously, too. (Even if you don't want MegaTalk, if you do any modem work at all, believe me, you want STalker!)

The MegaTalk board is also capable of *exceptional* speed. Where most boards run out of breath at 9,600 baud (about 960 characters per second), the MegaTalk board is capable of moving at 921,600 *baud* (92,160 characters per second). To give you an idea how fast that is, when used to connect Atari systems together, MegaTalk can transfer the amount of data on a full, double sided disk (720K) in *eight seconds flat*. No other Atari serial port even runs a tenth as fast as MegaTalk!

The MegaTalk "BIOS" software (included), which goes in your AUTO folder, allows ST software to use the

MegaTalk board at the "usual" baud rates people are used to (110, 300, 600, 1200, 2400, 4800, 9600, 19,200). Or, you can kick in second gear, starting with 38,400, and go to 57,600. For those industrial-strength transfers, put it in overdrive, and run at 230,400 baud (Appletalk speed), 460,800 baud, or 921,600 baud!

The MegaTalk board is also compatible with the upcoming TT high-speed serial port, and is even based on the same serial chip, the Zilo SCC. If/when Atari releases a

network for the TT, MegaTalk should plug in; we already

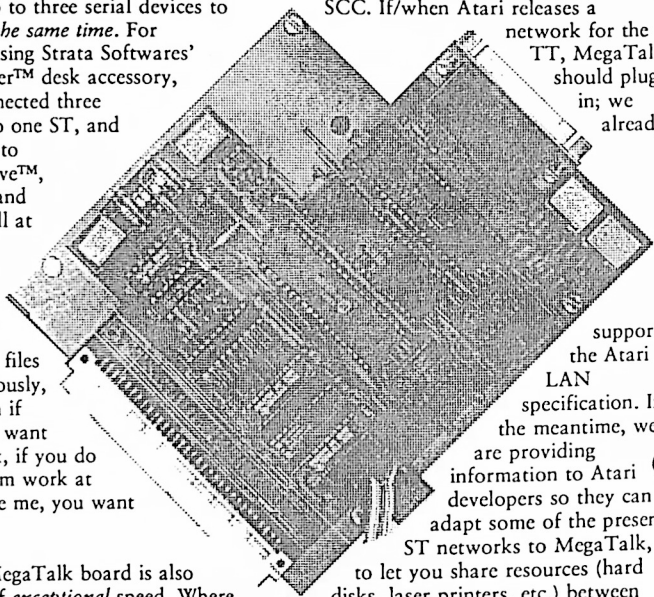
support the Atari LAN

specification. In the meantime, we are providing information to Atari developers so they can adapt some of the present

ST networks to MegaTalk, to let you share resources (hard disks, laser printers, etc.) between several machines.

M AC MODE SERIAL APPLICATIONS: These connectors are Mac-ready; you can plug straight into any Mac peripherals. It works like you think; plug in your Mac mini din-8 cables, run Spectre 3.0, select "LaserWriter" from Chooser, and start printing. Or plug straight into a Mac network and use it, including file servers, LocalTalk PostScript™ printers, and so on.

The MegaTalk ports are 100% Mac compatible, hardware and software.



Even Mac programs that "break the rules" work fine on MegaTalk. You can plug your modem, FAX, networks, anything you can plug into a Mac into the MegaTalk. AppleTalk/LocalTalk is among the largest installed networks in the world; now your Spectre can plug right in!

In addition, *for the first time ever*, Mac MIDI programs now work with Spectre GCR, with standard Mac MIDI interfaces. We have tested both the Apple and the Passport MIDI interfaces, and they both work fine, as well as many popular Mac MIDI programs, like Finale™, Vision™, Master Tracks Pro™, and Beyond™.

Mac SCSI Port: As you may know, Spectre already supports Mac hard disks in software – if you can get them physically connected. This isn't always so easy; SCSI is two parts voodoo to three parts magic, and hooking into the Mac 25-pin connector from the ST 50-pin required building a custom adapter cable – something definitely not for the beginner. We also couldn't support any SCSI device except Mac hard drives with this setup. We tried to make Atari SCSI do what MegaTalk SCSI does, but it just wasn't going to happen; many Mac programs "break the rules" and directly access SCSI, which of course requires the exact Mac SCSI chip, which Atari doesn't use. We wanted the best compatibility possible.

The MegaTalk SCSI port solves all that. It has the same 25-pin connector for SCSI you'd find on a Mac Plus or any Mac. Just plug in your Mac hard disk, and/or any other SCSI peripheral, and off you go. It's that easy!

Because SCSI lets you move around so much data at very high speed, it's a very popular way to hook devices to the Mac. Besides hard disks (of course), we've also tested a ThunderWare LightningScan™ hand scanner; it works fine. And we've plugged in a Mac CD-ROM drive; we now have gigabytes (billions of bytes) of Mac software handy (the BCS™, BMUG™, and EduCorp™ CD-ROMS). That's about 1,250 floppies' worth. The EduCorp CD alone has 620 megabytes on it!

MegaTalk retails for \$299.95 each; a pair of MegaTalk boards retail for \$549; you save \$50!

68030 SST: The Art of Acceleration

The 33 Mhz Mega-Twelve

As Sandy will attest, once I passed my driver's license exam, I felt I should pass everything on the road. (One of the reasons I married Sandy is she comes up with sayings like this.) There's just something about *getting there faster* that's fun. Maybe Steve Jobs meant this when he said, "The journey is the reward".

The Gadgets 68030 SST board technically is an accelerator and memory expansion for the Atari Mega ST product line. But it's really more. To me, the board is a *statement*, made by an ST believer, that there's *no reason* for the ST to be considered obsolete! The Gadgets SST gives your system the memory and the speed to compete with today's very powerful machines.

A LITTLE BIT OF HISTORY: In December 1989 I held a conference on the GENIE network to discuss the possibility of doing a 68030 accelerator board. Lots of people showed up and there was lots of interest. The result of the conference is our 68030 SST board. See, it's market research; I remembered an earlier conference where many people showed up to show support for the 128K ROM Mac emulator (I know enough to make products that people show interest in) so we did Spectre 128, then Spectre GCR, which, as you know, are very popular. More people showed up for the 68030 conference than the Spectre conference.

Thus, we got to work on the 68030 design in early 1990. In April 1990, we showed a development unit that proved a 68030 could run on the Atari, at World-of-Atari in Anaheim, California. It was *much* faster than a regular ST, but for us was just a research tool. We had to find out: what *really* mattered in terms of speeding up an ST? A great deal of research went into this question. Did we want a cache? Did we want more Mhz? Did we want more RAM? Would everything we wanted on the board fit? And what could we make it for?

The idea was to keep the costs down to where someone could afford

the product. I mean, lots of people can do accelerators if price is no object ... let's say, hook an ST to a Cray X/MP. Doing something the ST market can afford is a separate issue. So we did some research.

WHAT SLOWS DOWN AN ATARI ... AND HOW TO FIX IT: There's 4 megabytes (4 million bytes) of memory allowed for in the present Atari design. Adding more than four is fairly difficult, because the various memory support chips Atari designed (MMU, etc.) only handle that much. This four megabytes is limited to 8 Mhz access speed by your processor. The processor in the Atari, a 68000, is only rated for 8 Mhz. So, let's drop a 16 Mhz rated processor into the Atari, set the clock to run at 16 Mhz, and see what happens.

You only get a 10% speed increase! What happened? A processor works by "fetching" instructions out of memory, and doing what the instructions tell it to. It spends a lot of time doing this "fetch". Bad news: Every time the processor goes to Atari memory, *it has to slow down to 8 Mhz*; otherwise, it would trip over the video access and crash the system. So you only go up to 16 Mhz speed when the processor does something that doesn't require a memory access – and as you can see by that 10% speed increase, that's only one time in ten, on average.

Atari's video and memory chips cannot be cranked up past 8 Mhz (their design limits), and we can't change out the Atari's memory, or finagle things to let us get to their memory at more than 8 Mhz.

However, we can *add our own* memory past that 4 megabyte speed-limited area. If we do this, the Atari hardware won't force the new memory to 8 mhz; we can run it just as fast as we decide. And this has other neat side effects, because now you can add more memory to your machines.

MEMORY PLUS SPEED EQUALS MFASTRAM: Sure, a few years ago, adding memory to an already 4

megabyte machine would have seemed pointless. Memory was very expensive back then. Nowadays, it's about \$50 per megabyte, and that's for good fast memory. And applications have caught up with the Atari's memory limit. Page layout programs need the memory; animations need it; sound sampler/digitizers need the memory (in particular!), and everyone loves running from a RAMdisk as opposed to anything else. (And we will restrain ourselves from pointing out that the 68030 chip gives a solid basis for true multitasking – which needs more RAM as well.)

So it's time to make your Mega-4 into, well, a Mega-12. Since Atari's memory and video chips don't talk to this memory, *it runs as fast as we want* – 16 Mhz, 25 Mhz, 33 Mhz, or maybe even faster. We call this memory "fastRAM". It works just like regular Atari memory; it just works faster.

If you load your programs into fastRAM, they will run far, far faster than if they are loaded into Atari RAM. Video and disk have to come out of the low 4 megabytes; that's not a big issue in our opinion. (We give you utilities to make that happen, for instance, "fastRAMload".) You will find that even programs that really do lots of video animation (i.e., screen updates) are going to speed up, because the program itself will be running far more quickly, in fastRAM. And yes, disk access and such have to be from the low 4 megabytes as well; unless you're really forcing the hard disk to its limits, you won't even notice. The 68030 is so fast at moving memory around that Atari literally didn't bother putting a blitter into the TT, and for good reason; you don't gain anything racing a 68030, even with a high speed blitter.

Remember, we designed this board to buzzsaw through your programs, and we're giving you space for 8 megabytes of top speed RAM just to help do that.

Now we need to talk about the processor.

THE SOUL OF THE MACHINE: Motorola's first try at the 68000 model was, well, the 68000. They then released newer and newer processors,

each vastly more powerful than the last. The chip we are using is the 68030, which makes the 68000 look pretty tame indeed. The 68030 is so powerful, it's even got its own onboard memory to speed things up (a 256 byte "cache").

The 68030 is the heart of many *extremely* powerful machines today, from Sun to NeXT to Mac computers and workstations. There's a damned good reason so many different manufacturers have gone to Motorola for their central processor; it's a clean, fast design. (It compares nicely to the 80386/80486 series, if you're wondering). If you're curious, we didn't use the brand-new 68040 because it would cost us (and you) upwards of \$1000 per chip, not to mention designing an entirely new motherboard as well.

Anyhow, there are many nice features of the 68030 (compared to its grandfather, the 68000), and I could spend pages talking about them. However, let me very briefly list them.

CLOCK SPEED: awesome. The 68000 tops out at 16 Mhz; it can't be reliably pushed faster than 16 million operations per second. The 68030 *starts* at 16 Mhz, is available at 33 Mhz, and if you try, you can go to 40; Sandy's Mac IIx uses a 40 Mhz 68030. Compare that to the 8 Mhz you are running at now!

MORE HAPPENS EACH CLOCK: The 68030 likes to talk 4 bytes at a time; the 68000 only talks 2 bytes at a time (all else being equal). Hence, for each "tick", more happens in the 68030. Thus, there's another acceleration that's not immediately obvious.

ONBOARD MEMORY MANAGER: This part is pretty complex to explain; let me sum it up by saying that it lets me play absolute magic with memory in the ST. This part opens the door to virtual memory, protected mode multitasking, and many other neat things. It's the single piece of hardware most needed in the Atari world – and it's just part of the 68030 chip.

ONBOARD CACHE: When the 68030 sees part of your program being used over and over (say, a common "loop"), it loads it right into the 68030 chip. Since

all memory has to slow down from time to time for maintenance reasons ("refresh", "precharge") – well, if your loop makes it into the cache, it doesn't matter if main memory is halted for a moment or not. The 68030 keeps buzzing along at max speed.

PIPELINING: The 68030 is really many processors in one. For instance, the 68030 has one computer that lives to feed the main processor ("Feed Me!"). It tries to make sure the main 030 processor never has to wait on memory. It does a very good job. As we've seen with the Atari, the main thing that bogs a processor is waiting on memory; well, no more.

BURST MODE: This is a way in which the next few instructions are grabbed from memory and pulled into the 68030 at vastly higher speed than they normally would. It takes some very good support circuitry to make this work; many people are quoted as saying it's impossible to make burst mode work with dynamic RAMs, for instance. (Oh, I just love that "impossible" word! It's "impossible" to make Mac programs work on the Atari. Heh! We have a saying at Gadgets: The difficult we do with assembly language; the impossible we do with Diet Pepsi.)

The effect of burst mode is another speedup of your program; it varies, depending on the program's "branchiness".

Anywho, there's much, much more I haven't room to cover. (We had to delete some stuff to make this fit.)

COMPATIBILITY: The 68030 is compatible with the programs written for the 68000. So your ST stuff, by and large, works just fine on the 68030.

Yes, it is possible to write an ST program that breaks on a 68030, if you try. (This is called "breaking the rules".) Atari, who uses the 68030 in their TT, reports that 80% of the software in their extensive library works just fine! We expect that sort of compatibility, and to only fail with poorly written programs. And usually, the programs that fail are only broken in one or two minor places (like the stack frame) – and we'll have one heck of a surprise to spring on those programs to fix 'em. (Hmmm, that

means they'll maybe run on a TT, doesn't it?) By way of hints, I'll mention that we have lots of experience fixing Mac programs that "break the rules" in a Big Way.

For you Spectre fans, all Mac programs, without exception, that we have tested work perfectly on the SST. This is because the Mac had the 68020/68030 much earlier than Atari, with the introduction of the Mac II, and any bugs showed up and were fixed long ago. This means exceptional compatibility and speed for Mac emulation! Spectre 3.0 runs just fine on the board, and also on the Atari TT. The 3.0 version number ties nicely into the 68030; we often call 3.0 the "Spectre oh-thirty" in-house.

We feel that the Gadgets 68030 SST board represents a new, more powerful ST, with far higher speed and far more memory, and opens the door to entirely new areas that the ST formerly couldn't access. Now, let's get on to the nitty gritty (fun stuff).

WHAT ABOUT TOS? Atari has committed to licensing us a modified TOS 1.6 to ship with our 68030 SST, so our customers won't have to "buy their own ROMs". TOS 1.4 and below do not work with the 68030 processor, for many reasons (chief among them space-saving techniques which, in all fairness, saved you money in the ST's price). TOS 1.6 works just fine; it also supplies some neat features that help us with the 68030 capabilities as well.

We want to thank Atari for doing this for us. It takes a far-sighted company to commit to helping us extend the life of the ST; a short-sighted company would worry about us competing with TT. We perceive the Atari TT not as competition, for it's a far different machine, with VME™ support, many serial ports, Ethernet™, AppleTalk™, in short, it's a workstation with UNIX! It's a much higher-end machine, with a different target audience than the ST we're trying to "supercharge".

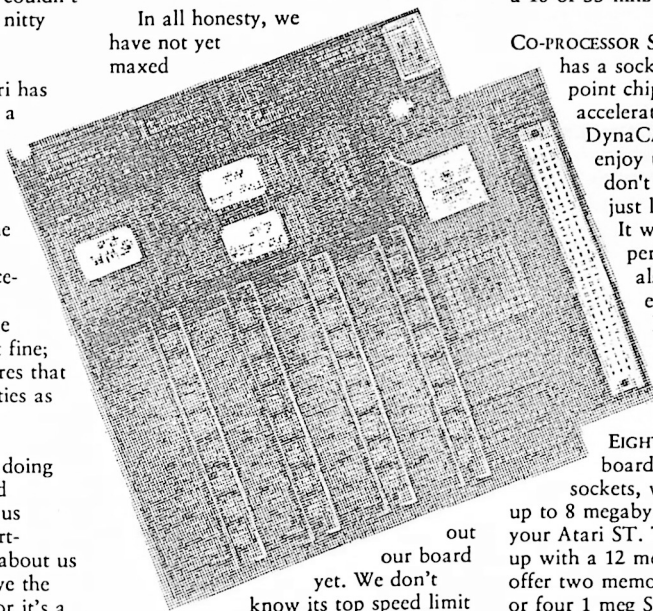
For all the complaints you might have heard about Atari not caring about its customers, well, they're letting

you make your ST into something that'll blow the competition into the weeds. Think about it.

HOW MANY MHZ? Way too many people rely solely on Mhz to tell them whose board will be the fastest. As I've said over and over, this does not happen in real life. Even a 100 Mhz 68030 stuck into an ST, with no overall system design work, will not help much if it has to bog down to 8 Mhz every time it goes to memory.

Our 68030 board design is "asynchronous". This means it runs at whatever the speed of the components we plug into it. For you, this means you can buy just as fast an SST as you can afford (and can handle!) We think you will like 16 Mhz, but if you need, higher speeds are available. I can only describe 33 Mhz machines as "incredibly fast". You won't believe your eyes.

In all honesty, we have not yet maxed



out our board yet. We don't know its top speed limit past 33 Mhz. I will point out that Mac II superusers have already gone to 50 Mhz in their 68030's...

Bear in mind that speeds like this take top-quality components to be reliable. Thus, the old adage, that I first learned with my V8 Camaro, applies:

Speed costs money; how fast do you want to go?

WHAT'S ON THE BOARD: The SST is a 68030 processor accelerator and high-speed memory board for the Atari ST. The current board configuration is only for the Mega ST, which has lots of inner space for the board (and more importantly, for the heat the board will generate). By the way, we are planning configurations for "smaller" ST's (as soon as our board layout person recovers from the celebration hangover); we're not planning on leaving out 520/1040 owners!

68030: First, of course, the SST needs a 68030 microprocessor. The speed of the 030 depends on what you want to spend. Faster 030's cost us more to buy from Motorola, as you would expect. We are planning to sell the basic package with three options: no 68030 (This lets us sell the basic package for well under \$1000, for those of you who want to really customize your SST.), or a 16 or 33 mhz 68030.

CO-PROCESSOR SOCKET: The SST also has a socket for a 68881/2 floating point chip, which will radically accelerate programs that use it. DynaCADD users are going to enjoy this option a lot. If you don't need a coprocessor, you just leave the socket empty. It won't affect everyday performance. The board also features a nice expansion slot that we have a few devious ideas planned for. The 33mhz option includes a 68882 coprocessor.

EIGHT SIMM SOCKETS: The board also has 8 SIMM sockets, which allows you to add up to 8 megabytes of SIMM memory to your Atari ST. This means you can end up with a 12 megabyte ST. We will offer two memory options: no SIMMS, or four 1 meg SIMMS.

Once again, this means all your favorite ST programs can now have up to 12 highspeed megabytes to work with. While we'll probably run into a few exceptions (e.g., bad programming), the vast majority of programs work perfectly as-is. So if you've ever wanted a couple of 5 meg RAMdisks that run at incredible speed, here's your chance; if you've ever

wanted a really huge spreadsheet, here you go. People into sound digitizing and MIDI are also going to have one nice time with this feature.

FASTRAM UTILITIES: Now, if you run your programs in the low 4 megabytes of memory, they're going to bog down to 8 Mhz, period; the Atari enforces that. So we will provide a few utilities to help you make sure your programs are running in "fastRAM" if you have it (you really should). This is the sort of thing where you put our program into the AUTO folder and forget about it; it's easy to install.

Along with the above-mentioned things, we also plan to include a 64-pin socket, a spare 68000, TOS 1.6, a manual, a floppy, and a couple of other miscellaneous items. And, since 8 meg of SIMMs pull lots and lots of power, we may also end up including a power supply to handle the increased demand, but we don't know for sure yet.

We're going to market the SST in an upgradable configuration. First, get the basic package and a 16mhz 68030. Later, add fastRAM for more speed. Later, upgrade the 68030 to a faster model, and so forth. We much prefer this approach to forcing you to buy everything at once.

INSTALLING THE 68030 SST:
Installation requires the removal of

the 68000 in your machine, soldering in a socket (which we'll include), and plugging our board into that socket where the 68000 was. You "can go back" by removing the board and putting the 68000 back in (which we'll also include).

We *strongly encourage* you to have your dealer install the SST; clipping and soldering 64 pins on a Mega motherboard is *not for novices*. For those of you without local dealers, we are planning on having designated "authorized Gadgets dealers" who will install your SST in your Mega for you.

OKAY, SO WHAT DOES IT COST? Since there are several highly priced components involved, we have decided to sell the Basic Package and Options separately. The Basic Package consists of the SST board with no 68030, coprocessor or SIMMs, and costs \$599. One of the three Option Packages A, B, or C, is *required* by the Basic Package to operate. They are:

- A: 16mhz 68030 \$200;
- B: 16mhz 68030 and 4 1-meg SIMMs \$460; and
- C: 33mhz 68030, 68882 coprocessor, and 4 1-meg SIMMs \$800.

Please realize that the SST will not run as fast as possible without SIMMs, and, of course, it will not operate at all without a 68030.

SPECTRE 3.0 FROM PAGE 1

THE NEW MENUS: The Spectre startup-page menus have been completely gone over, to better group functionality, get rid of obsolete options, and so forth. Here's the highlights:

Spectre 3.0

ATARI MENU: This menu now displays the current version of Spectre, right in the menu!

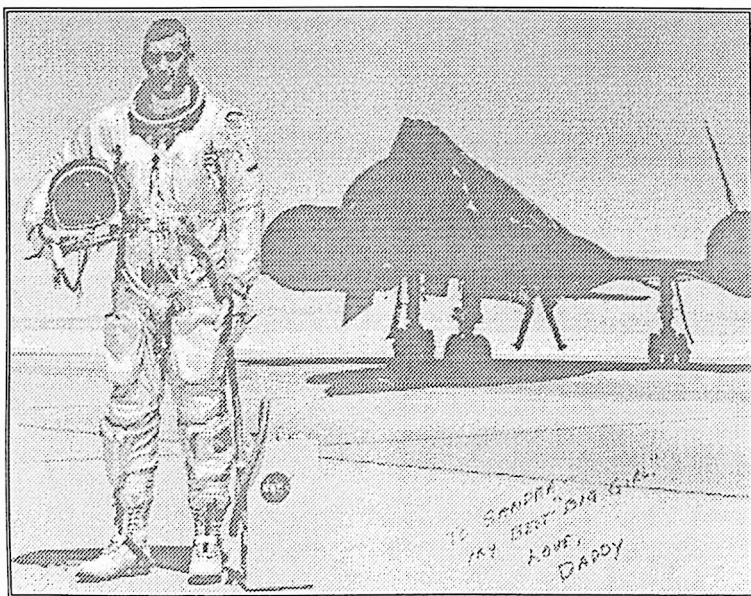
File	
Save settings	
Spectre	<ret>
Quit	^Q

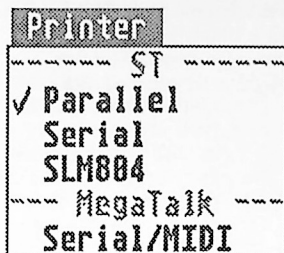
FILE MENU: We've swapped the position of "Spectre" and "Quit" so that "Quit" is in the place most ST users expect it, at the bottom entry. (Heck, most people start Spectre up by pressing RETURN or ENTER, anyway...)

Memory	
128 K	
512 K	
1024 K	
2048 K	
2560 K	
4096 K	
6144 K	
8192 K	
12288 K	
Max	
✓ 3840 K	

TT hardware, but these options will not be active until Spectre 3.1.

By the way, in case you were wondering about why we used the SR71, Sandy's Dad was a test navigator for it.
...Here's the proof!

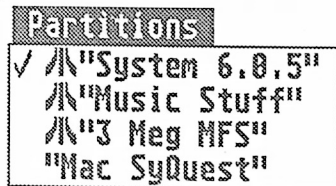




PRINTER MENU: If you have a MegaTalk board installed, and you select the Serial/MIDI option, it de-selects the Spectre I/O you're more used to: the serial and parallel port. Since MegaTalk uses both the "modem" and "printer" ports of the Mac in a fully Mac compatible way, you cannot select Atari serial/parallel and MegaTalk Serial/MIDI at the same time. (If you think about it, MegaTalk has to do this in order to work; there are too many conflicts.)

To make it even more confusing, if you have a MegaTalk board installed, and are using AppleTalk or Mac SCSI, you *don't have to select* the Serial/MIDI option. This means that you can still use your Atari serial/parallel ports (and whatever you have connected to them!), even with MegaTalk installed. You only select Serial/MIDI if you are using Mac MIDI or Mac serial (i.e., modems, etc.).

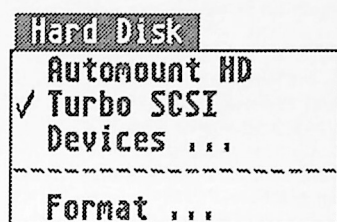
Also on this menu, if SLM-804 is selected, please pick the correct SCSI ID (5 or 7) under the "Options" menu.



PARTITIONS MENU: This completely replaces the removed "Cache" menu. These are the Spectre partitions that were found on the *currently* selected SCSI devices, up to 16 maximum. Anytime devices are changed, all the drives are re-polled.

Note: If you select one of the partitions, you will always boot from that partition. The selection checkmark no longer turns a partition on or off;

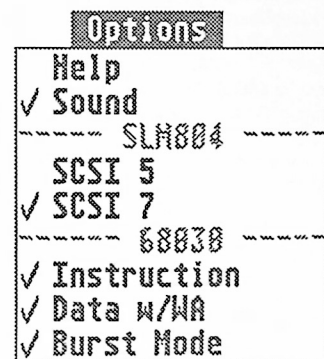
all partitions are always available for mounting by keyboard selection. Also, if you have a MegaTalk board installed with a Mac SCSI hard disk, partitions on it will not show up on this list!



HARD DISK MENU: The "Slow SCSI" option is not needed with the new hard disk driver we have, so we took it out. We've replaced it with the "Turbo SCSI" option. Try "Turbo SCSI" for really high speed hard disk use (if you run into trouble, of course, go to normal SCSI speed), otherwise stick with standard speed.

Also, please note the neat new "Format ..." menu, which shows you a graphical picture of your hard disk's current partition layout – the first such graphical representation of partitions we know of!

FLOPPY DISK MENU: Although this menu hasn't changed, you should be aware that there is no longer a Cache Menu.



OPTIONS MENU: We have added a "Help" option to give you pointers on the most commonly asked questions about Spectre.

The "SLM-804 SCSI 5/7" selector is also here, since it really is an option pick.

We also allow you to select operating modes for your 68030, if we

find you're running on a 68030 processor; otherwise they're unavailable. These options include "Instruction Caching", "Data Caching with Write Allocate", and "Burst Mode" selections. Essentially, with the 68030, you can greatly speed things up by turning the caches on. We let you select these caches because some software crashes when cached (usually, ones with self-modifying code).

68030 SUPPORT: The Spectre now works just fine – and *very, very quickly* – with the 68030 processor, on the Gadgets 68030 SST and on the Atari TT™ computer. (We have not had a chance to test it with other 680x0 boards, but it ought to work fine). We also work with 68881/2 floating point chips in Spectre mode if installed; since hardware floating point support is built into the Mac operating system at a low level that programs use, nearly all Mac applications work fine with floating point hardware, performing math at far greater speed. You'll have to see this difference to believe it; it sped up my ray tracer 30 times!

If you start up Spectre 3.0 on a 68030 machine, you will see new menu options enabled: they allow you to set caching types: Instruction, Data w/ Write-Allocate, and Burst Mode (which requires special hardware inside your machine to work; our 030 board has it, and the TT reportedly has it). This is useful for several reasons; first, a few Mac programs don't like caches, particularly those with self-modifying code; Mac II users have long had cache-off capability for this reason. Second, it's useful to benchmark how much the cache speeds things up. Answer: A LOT. When you see a TT with Spectre 3.0, you'll have a very good time; windows pop open and shut *instantly*, no delays, and anything that requires the Mac to think a lot suddenly gets really fast.

Of course, when running Spectre on the Gadget's 030, you'll get your answers before you ask your question! (Just kidding.)

We have not yet added support for things like TT fastRAM (a type of memory that can execute much more quickly than normal RAM); if your TT has the memory, this will allow you to have far more than 4 megabytes when

in Mac emulation! There's also built-in SCSI and LocalTalk to add support for; we just haven't had a TT long enough to add them yet. Look for these in Spectre 3.1.

DISK DRIVE IMPROVEMENTS:

We've spent a long time working on disk drives, improving their support, speed and compatibility. Why the effort? The Mac operating system fundamentally uses the disk a lot; it keeps "resources" in disk files, and programs only read in those resources as needed. This means you use the disk a lot in Mac programs, and we want to minimize that wait.

FIRST: You can now format both Mac and Spectre floppy disks from inside the emulator; heck, we almost took off the FORMAT function from the Spectre menus, because you don't need it anymore! (Before, you could only format Mac disks in Mac mode).

You can also (re)format hard disk partitions from within Spectre; you could never do this before. This is very important, because "disk fixer" programs like Disk First Aid™ rely on undocumented, special stuff only written by the Mac formatter to fix disks. The disk fixers didn't work with 2.65; they now work 100% with 3.0.

Anyway, you should *always* use the Mac formatter while inside Spectre nowadays; either format a blank disk, or use "Erase Disk" from the "Special" menu to reformat a disk. (Of course, don't "Erase Disk" a partition with data on it you need!)

We recommend that you move data off, then do an "Erase Disk" with Spectre 3.0 to precisely Mac-format any partition you can, floppy or hard disk, so it exactly matches the specs needed for these disk repair programs. Norton Utilities and SUM II have enabled us to recover many, many damaged partitions and floppies. You're going to want them the first time one of your Mac partitions gets damaged!

SECOND: While in Mac mode, MS-DOS floppies can now be read/written through Apple File Exchange™, DOS Mounter™, and other Mac programs directly. I don't think I need to tell you how easy this makes moving data back and forth from Atari/MS-DOS to Mac

mode! Spectre 3.0's disk drives now appear to be 720K drives driven by a "SWIM" controller, for you technophiles. (This is very similar to the support Mac gives MS-DOS floppies on its newest machines.)

THIRD: We now have a new partition type for hard disk users. It supports saving and restoring "parameter RAM", the Mac's battery-backed-up RAM, directly to the hard disk, as well as saving some other nifty stuff, such as Map and Sound CDEV selections and CONFIG PAGE setup (so you don't have to re-configure every time you start up!). Since the ST has no such battery backup, we have to save to disk; this is the first time it's been available for full extended parameter RAM (now the standard).

Those of you who know how fond we are of the cartoon "Bloom County" will understand when we tell you the old partition type code in the partition map was labelled "ACK"; the new one is "OOP". (Naturally, we will support the old partition type until the end of the world).

Anytime you format under Spectre 3.0 or newer, you'll get an OOP partition type. Any Spectre 2.65 or below partition is ACK partition type. The *only* difference is that ACK (old) partitions cannot automatically save parameter RAM for you.

As an added bonus, when you change a GEM partition into a Spectre partition, you no longer have to reinstall your hard disk autobooting software!

FOURTH: We've completely rewritten and fine tuned the hard disk driver; many of you that had to use the slower mode ("Slow SCSI") will find you don't have to anymore! And better yet, while learning the absolute low-level hardware of the hard disk system in order to get more reliability (and to get rid of Slow SCSI), we discovered ways to speed it up even more. So now, we now support two modes, regular SCSI, which is fast, and Turbo SCSI, which is ultra fast. (Turbo SCSI pushes hard disks way past what an ordinary Atari with GEM ever would, yet is rock-steady in our testing.) Give Turbo SCSI a try - it really moves!

FIFTH: You can now park your hard disks with a simple keypress. Now closing down your machine from Spectre mode is simple: just pick "Shutdown" from the Finder, wait until that's finished, park your hard disks with the keypress, and power off your machine! No more having to restart the Atari to park your hard disks before powering off!

SIXTH: We've gone ahead and ditched the floppy disk cache; no one was really using it, and our testing showed it was degrading the performance of GCR disks. (In some cases the cache look-up was interfering with reading the disk at max speed, 1:1 interleave.) It had its place on Spectre mode disks, but it was time for it to go; the space that was thus freed up was used for our new hard disk code, which you're going to like!

SEVENTH: We now support 16 hard disk partitions; we only supported 8 before. In fact, we support so many partitions that they now have their own Spectre menu entry (replacing the cache menu); the old partition list just became too long for GEM to handle properly as a menu! We added this support because:

- Using many partitions for multibooting (booting with different System/Finders) has become very popular, which adds lots of small partitions (say, Systems 6.0.2, 6.0.3, 6.0.4, 6.0.5 in separate partitions, plus MFS partitions for Transverter).

- BIG hard disks are getting really cheap these days! One day 8 wasn't enough for us, so we bumped it to 16. (Let us know if you need more).

EIGHTH: Your hard disk partitions can now be any size! (Well, okay, our formatter tops out at 256 Megabytes. Mac CD-ROMs and WORM drives are preformatted, so we don't worry much about them.)

Caution: The hidden "desktop" file can have a fit and completely break (thus zapping the partition) if it gets overloaded with icons; this happens, in our experience, at around 130 megabytes in one partition. We found this out a very hard way; "Desktop" has a fixed limit on the number of icons it can hold. Again, this is a hidden file; you need a disk utility

(DiskTop™ from CE Software is great!) to even see it. One workaround hint: Try "rebuilding" the Desktop, by mounting the hard disk then immediately pressing ALT-CTRL, to strip out obsolete icons. A public domain icon stripper may also work for you. Us? We stay under 128 megabytes, and most commonly go with Syquest 44 meg cartridges – fast, and compatible with Mac formatted Syquests.

NINTH: Your BGM (Atari's "Big GEM" partitions) can now become a Spectre partition. **HOWEVER**, Atari's hard disk formatters in general do not understand more than four partitions, which can cramp your style. They've adopted an odd scheme for supporting more than 4 partitions, in which the fourth partition sort of tells the system where the additional partitions are. We cannot handle the additional Atari style partitions in Spectre 3.0; we are looking at this for Spectre 3.1. Frankly, I would go with a formatter such as Supra's or ICD's if you can, that will let you build up to 12 partitions for Spectre use, without forcing odd schemes or size restrictions on you! We use both ICD and Supra in-house.

TENTH: We now support both types of Apple-formatted hard disks, the old and new style. We used to only support the old style. The new style came out basically with System 6.0.x and (we think) was brought out to allow putting both A/UX™, ProDOS™, and Mac HFS areas on a Mac drive (sound familiar? *grin*) The older scheme wasn't partition oriented.

Anyway, we started seeing more Mac hard drives with the new method we couldn't talk to, so we forced it to support both schemes now. This means that we'll talk to basically any Apple formatted hard drive without troubles. In particular, Syquest cartridges formatted on a Mac can now be used directly with Spectre to transfer programs and data! Believe me, Syquest Cartridges (Atari Megafile 44, Toadfile 44, Carter Graphics) are the best deal in hard disks today – rugged, faster than most "fixed" hard disks, removable, and additional 44 megabyte cartridges are only about \$65! We use them for all software development here at Gadgets.

Incidentally, we don't yet support

the brand-new style Atari TT SCSI drives, although a regular Atari hard drive plugged in a TT works just fine. (The TT basically has two totally independent SCSI-like hard disk connections, one the familiar "ACSI" Atari "DMA" hard disk, the other the industry standard SCSI.) Adding this support is not a big deal, we're planning on having full TT ACSI/SCSI hard disk support in Spectre quite shortly. We just haven't had a TT long enough yet to do anything but bring up the full ST Spectre, without many TT extensions; a few six-packs of Diet Pepsi will give us many new, neat TT features.

LASER PRINTERS: Very good news! "Async LaserWriter™", a Mac program that allows you to directly print PostScript™ to any PostScript printer hooked up via the serial port, now works! This means that those of you with LaserWriters (or with "generic" PostScript™ printers) can now print to them directly, *without Transverting or using UltraScript*. Just pull down "PRINT" and hit RETURN.

"Async LaserWriter" runs at any standard baud rate (1200 to 19,200) out of the Atari serial port; you will find 9600 baud about equal to AppleTalk in overall print speed. (Due to how Async LaserWriter must ask the printer if Laser Prep™ is loaded and what fonts are resident, one-directional parallel connections do not work, but we think you'll be more than happy with serial speed).

Async LaserWriter is just another Chooser-level printer driver, just like ImageWriter, LaserWriter, or the Epson drivers you may have seen. It's controlled by an "ACL" file, which controls its setup with the printer; it comes with a "generic" one that will work with about anything. You basically "Choose" the Async LaserWriter entry, tell it a few things (your Laser Printer's name and your ACL file), and then you're free to pull down PRINT and go!

Finally, a minor bug has been fixed; after an SLM-804 screen dump, the laser picture is now blanked out, to avoid leaving the screendump in the next thing printed.

THE AMAZING UNCRASHER: You're not going to believe this until you try it, but ...

Let's say you run a Mac program that really, really goofs, and you get the Spectre crash page. (A point of philosophy: This page tells you in exacting detail *what* caused the problem and *where*, so we can track it down and try to fix it later. We believe in giving you this information rather than a simple "ID=02" next to a picture of a bomb. I guess that sorta says it all in terms of corporate philosophy.)

So, while on the crash page, try pressing the "*" (asterisk) key on the numeric keypad. Most times you will find yourself literally un-crashed – back at the Finder, running in Mac mode!! You'll generally find menus working, windows back up, and whatnot.

Naturally, since the system did indeed crash, there's a chance some critical low memory tables have been damaged or somesuch. Thus it is a good idea to go ahead and "cleanly" shutdown and restart (just to make sure all is well). Our experience has been that most crashes aren't catastrophic, though; they are one program making one goof and immediately halting because of it, in which case returning to the Finder is no sweat.

This IS *experimental*; use it with caution. But I can think of several places where making it back to Finder for a "clean shutdown" (at minimum) will save me from losing what I've done (by "ejecting" the disks, and updating the directory, before shutdown.).

If you think that's cool, well, we are experimenting with a GetNextEvent trapper which may well allow you to un-crash back to the menus of the program you were last working at! This could allow you to (for instance) "Save" a document that you crashed in the middle of working on. No guarantees here, folks; but speaking as someone who's lost a lot of work to crashes in word processors, *if I can do it, I will*.

A lot will depend on how well the UnCrasher works in the real world, so please let me know your experiences with it, ok? Thank you.

KEYBOARD IMPROVEMENTS:

We've completely redone the keyboard support to make for maximum Mac compatibility. For instance, Mac programs that used the "shift arrow keys" would not work in 2.65, because we were using those shifted arrow keys for our own Spectre internal purposes. (Back when Spectre was brand-new, we did not support Mac arrow keys at all, so it seemed logical to use them for Spectre purposes; we used up so many keys over time that we decided a rewrite was in order).

We've also added some pretty neat keyboard features, such as warm and cold reboots being the same keypresses as Atari TOS 1.4 and above, parking hard disks, and more. Check out the Keyboard Command Table for a current list of what does what with 3.0. We hope that you'll find these new Spectre function keys much easier to remember and use than what they were previously!

Overall, we feel that with the re-organization, the keyboard functions are far more logically arranged and easy to remember than they were before. Again, they grew one by one previously as functions were added; it was time to finally organize them into coherent order.

Note that the two "Restarts" are identical to the two TOS 1.4 and above restarts! You'll soon find this quite natural.

VERTICAL BLANK SELECTION: In the spirit of "you know best", we've made "vertical blank", which is the number of times per second the machine performs internal functions (mouse movement, etc.) selectable by you. Basically, the Mac does "VBL" 60 times per second. On an Atari color system, Atari also does it 60 times per second; on an Atari monochrome system, Atari does it 70 times per second, which causes some minor snags. To top it all off, outside the US, VBL is 50 times per second.

Selecting whether you want 60 or 70 is very easy to do. Pop into the on-line configuration page by pressing Shift-HELP. Toggle "Vertical Blank" with one keypress. Pop back out by pressing

CONTINUED ON PAGE 11

Keyboard Command Table

FUNCTION KEYS:

F1 Mount/note eject, drive A
F2 Mount/note eject, drive B
F3-F10 Mount HD partitions 1-8

Shift-F1 (unused)

Shift-F2 (unused)

Shift-F3 Mount HD partition 9

...

Shift-F10 Mount HD partition 16

CONTROL-FUNCTION KEYS:

Ctl-F1 Color, Scrunch mode; was shift keypad (

Ctl-F2 Color, Scroll mode was shift keypad)

Ctl-F3 Color, Top of scrolled screen; was shift keypad *

Ctl-F4 Color, Bottom of scrolled screen; was shift keypad -

Ctl-F5 SLM804, ImageWriter emulation ON; was shift keypad 2

Ctl-F6 SLM804, ImageWriter emulation OFF; was shift keypad 3

Ctl-F7 SLM804, Force formfeed; was shift keypad 9

Ctl-F8 SLM804, Dump buffer contents; was shift keypad 6

Ctl-F9 SLM804, 72 dpi rotated screendump; was shift keypad 0

Ctl-F10 SLM804, 300 dpi screendump; was shift keypad 1

ALTERNATE-FUNCTION KEYS:

Alt-F1 Mac Plus emulation. was alt keypad +

Alt-F2 Mac 512Ke emulation. was alt keypad -

Alt-F3 SCC/VIA patches ON. was alt-INSERT

Alt-F4 SCC/VIA patches OFF. was alt-DEL

Alt-F5 Orwell's disk monitor ON. was shift up arrow

Alt-F6 Orwell's disk monitor OFF. was shift dn arrow

Alt-F7 Turbo disk mode ON. was shift left arrow

Alt-F8 Turbo disk mode OFF. was shift right arrow

Alt-F9 Debug mode ON (not published)

Alt-F10 Debug mode OFF (not published)

ALT-CONTROL-FUNCTION KEYS:

The Alt-Ctl-Fx keys are only active in Debug Mode; Debug Mode is really pretty much only useful for us or when going after a specific program's problem.

Alt-Ctl-F1 SLM804 hex dump

Alt-Ctl-F2 SLM804 hex dump OFF

Alt-Ctl-F3 Disk messages ON

Alt-Ctl-F4 Disk messages OFF

Alt-Ctl-F5 Line-A tracer ON

Alt-Ctl-F6 Line-A tracer OFF

Alt-Ctl-F7 Debug to printer ON

Alt-Ctl-F8 Debug to printer OFF

Alt-Ctl-F9 Bus Error messages ON

Alt-Ctl-F10 Bus Error messages OFF

MISCELLANEOUS KEYS:

ESC

Same as keypad Clear (this results in a true ESC code for modems!)

UNDO

Same as Command-Z (normally UNDO menu entry)

DELETE

Same as Command-X (normally CUT menu entry)

INSERT

Same as Command-V (normally PASTE menu entry)

CLR/HOME

Same as Command-C (normally COPY menu entry)

HELP

Same as Command-? (normally HELP menu entry - if available)

Shift-HELP

Calls up configuration page; many options here! This *now works* on 832K size machines!

Alt-Ctl-Clr/Home

Parks all hard disks for shutting down system

Alt-Ctl-Delete

Warmboot (restart; stays in Mac mode) was shift-HELP

Alt-Ctl-RightShift-Delete

Coldboot (restart, goes back to ST mode) Was shift-UNDO

SPECTRE 3.0 FROM PAGE 10

HELP to exit. Three keys, that's it!

Here's the situation. Atari's monochrome hardware vertical blank runs faster than Mac's. We provide a *simulated* vertical blank that's timed exactly to Mac speed, but there are a *very few* exceptions where you won't want to use it, so we made it selectable. Essentially, our simulated vertical blank can interfere with a few Mac functions where timing is critical, since the priority levels interfere with the Mac operations (basically, MIDI and AppleTalk stuff).

ATARI HARDWARE VERTICAL BLANK:

- Generally runs a bit too fast. Often doesn't matter, but ...
- Sound will be higher pitched than usual.
- Some games need this to stay synchronized with the screen.
- *Required* for Mac MIDI and AppleTalk.
- Benchmark programs will trip up with this VBL.

GADGETS VERTICAL BLANK ("SIMULATED VERTICAL BLANK")

- Runs at precise right speed (60).
- Sound will be correct pitch.
- Some games require this mode to keep timing correct.
- Mac MIDI and AppleTalk *will not work right*.
- Some benchmark programs need this to return correct results.
- Fixes some other subtle things.

Generally, you're going to want to run in Gadgets VBL mode; only for the special-purposes applications listed above are you going to want to shift back to Atari VBL mode. Those of you who have a 520/1040 won't need to worry about changing VBL's until we do a MegaTalk for you guys.

A "FREE" 64K: By doing some *ascrunching* and squeezing, we've given you a free 64K more of memory to work with in most Mac memory modes larger than 1 meg. (All right!) We're also in the process of adding support for up to 12 *megabytes* of memory. This will not be available in Spectre 3.0, but we've reserved space for them in the memory menu to prepare for them. That's not to say we won't turn them on in Spectre 3.1, though! (hint, hint!)

For instance, reportedly the TT can have an additional 4 megabytes of RAM in it; added to the 4 you're used to, and you've got 8. Now we do have to go through some gyrations to make it work, but it's definitely possible. I'd personally love to have that much memory to match the higher powered processor! Again, we'd have this for you but for lack of time; the TT hasn't been around long.

The 68030 SST, of course, will allow you to have up to 12 megs in your Mega, so of course we will support that too.

ZEROSTORE ADDITIONS FIX

ZMORE PROGRAMS: We've made yet more additions to our ZeroStore handler; this particular piece of code is what made Mac emulation work in the real world of buggy Mac programs. Anywho, many programs that used to "freeze" now work fine - including the much asked-for Grammatik Mac™, PageMaker 4.0™ print-to-disk, and some others! Our compatibility has thus moved from "excellent" to "unbelievable"; it is getting positively unusual to see a serious Mac program that doesn't work on Spectre.

The one problem we've always had, which we've told you about, is copy protection. Good news; we're pleased to see a trend towards dropping copy protection, since copy protected disks mostly fail on the new Macs (particularly on the Mac IIx™ and Mac Portable™, where even talking to the floppy controller chip as part of copy protection is not possible!), and on the Outbound™ laptop. This is good news for us, too. We can handle some of the forms of copy protection that work on the new Macs, generally.

OVERSEAS USERS - SPECIAL

ADDITIONS: We are very grateful to the large number of users outside the United States that have purchased the Spectre and are using it. We are making every effort to support you; these next features are specifically for you.

CUSTOMIZED MENUS, IN ANY LANGUAGE:

You can now change most of the text in Spectre's menus ("Memory Size", "Hard Disk"), plus all sub-menus and dialogs to say anything you wish, in any language. This is intended specifically for our overseas users, so

that the menus can be easily configured to any language. The configuring is easy. We supply all menu and dialog text that Spectre uses in a text file. Just alter the menus in that plain-text file with *any* text editor/word processor, and next time you run Spectre, it'll use your edited menus! You'll find the editing easy; we extensively document the file, allow comments, and so on.

We intend to ship Spectre 3.0 with French and German language menus ready to use, and will try to help distribute other language versions to other users, as they become available. Spectre is a worldwide product, and one of our goals for Spectre 3.0 was making Spectre easier for our overseas friends.

CONFIGURABLE KEYBOARD: You can also now *easily* reconfigure the Spectre's keyboard. Because there are such a variety of international Mac keyboard layouts, of which we can't get any information, we don't know all possible layouts (for instance, the Swedish keyboard). In Spectre 2.65, we directly supported US, UK, French, German, and Spanish keyboards; but other users sometimes ended up with one or two keys not working correctly. Now, with the easy-to-edit keyboard configuration file, which again is just plain text you can alter with any text editor/word processor, any keyboard problems can be easily fixed by the user. It's simply telling the Spectre what "Mac" key to generate for a press of a given ST key.

You'll find the keyboard file well documented, and again, we'll help distribute keyboard files for various countries.

For instance, this allows users to swap the "Control" and "ALT" keys, which is a request we sometimes get from experienced Mac users who are used to finding the Command key on the bottom of the keyboard.

ALADIN DISK SUPPORT: Spectre 3.0 can now *directly* read and write to Aladin disks; the Aladin is a former 64K ROM Mac emulator that was particularly popular in Europe. We support both 9 and 10 sector double sided Aladin disks. This is intended to help users move from Aladin to Spectre easily.

A word of caution: Aladin places a virus in Mac software on Aladin disks. Spectre is immune to this virus (thank heavens), but we're uncomfortable with any virus, so we also try to supply the latest version of Disinfectant on our Mac PD/Shareware disk, which will remove this so-called "Frankie" virus. (If you're curious, this virus was part of Aladin's copy protection; it checked for a hardware "key" in the Aladin cartridge while in Mac mode every time a Mac program was run. If there was no key, a message would be displayed saying, "Frankie says no pirating!" This is one of the very first, original Mac viruses ever known!).

Please use Disinfectant 2.1 or above; previous versions didn't know how to remove the Frankie virus.

While on the subject of Aladin, we commonly get another question. "Why don't you offer a RESET-button-proof RAMDISK, like the Aladin did?" We found through *extensive* testing that a RESET press often flips bits in main memory; during RESET, critical dynamic RAM refresh appears to halt briefly, and that causes memory to fade. It's also possible that RESET during a shifter memory fetch/refresh transition can cause big problems in main memory. Hence, because we don't want people crashing because of corrupted System or other files, we have not put in this option and don't intend to. If you need a good RAMDISK, though, we provide Ramdisk+ on our PD/Shareware disk; it works very well.

Incidentally, it is very possible that the Mega ST's are more prone to this RESET memory-glitch than the original 520/1040's Aladin was developed on. Overall, we feel the Aladin was a well-done emulator; we simply differed from it in design philosophy. Given their philosophy, their implementation was quite good.

We are *very interested* in supporting the overseas market and welcome any and all suggestions on how we can improve our product for you. The menus in any language, the configurable keyboards, A4 paper support for the SLM-804 printer (that came with 2.65), and Aladin support are among our efforts in this direction.

SYSTEM 6.0.6 AND 6.0.7 WORK, BUT: The newly released Apple Systems, 6.0.6 and 6.0.7, work on Spectre with one or two exceptions. However, we don't recommend that you use either one, and neither does Apple. The new Systems are only for the new Mac Classic, IIsi, and LC computers. (They also have Sound Manager problems.) The recommended System for a Mac Plus (which Spectre is emulating) is 6.0.4, so we suggest you stick with that, or 6.0.5.

Will System 7 work? We believe so. Many people think that because the ST does not have an "MMU" chip it cannot run System 7. Well, Apple specifically says that System 7 can run on a Mac Plus with at least 2 megs of memory, and *a Mac Plus has no MMU!* A "Memory Manager Unit" (MMU) chip is specifically *not required* for most of System 7 to basically work or for many of its features; it's only needed for virtual memory (VM) and in later versions for process protection. Anyway, this means there is an *excellent chance* Spectre will work just fine on System 7, and if not, I imagine we'll hustle a new bug-fix release of Spectre out the door. System 7, by the way, has been delayed (again!) until sometime in 1991.

SPECTRE 3.0: FIXES & REPAIRS (A DIVISION OF GADGETS)

SYSTEM 6.0.4 AND 6.0.5 WORK FINE: In Spectre 2.65, Systems 6.0.2 and 6.0.3 were perfect, but 6.0.4 worked with one bug: it wouldn't allow you to pick Mac Plus mode. This broke three or so programs. System 6.0.5, the most current as of this writing, would not start up properly at all with Spectre 2.65.

We've gone ahead and fixed the bugs that caused this; now, 6.0.4 and 6.0.5 now work perfectly.

SOUND MANAGER FIXED: At last! The System 6.0.x "System Beep" bug and HyperCard sounds now work just fine. As you'll recall, we fought this to a draw in 2.65; we couldn't get full beep support in, so we left an option for you to force System 6.0.x beeps to work. You'll note we removed the temporary "System 6.0.x beep" entry on

the Spectre menus, since its no longer needed.

You may notice that the first beep takes a bit longer than any other; this is normal, and is the result of us reconfiguring our program at that moment to repair the beep problems. Also, you might notice some sounds (like Clink-Clank) are shortened; that's normal, and is just a result of us doing sound differently than Apple does it.

This should also fix an intermittent HyperCard lockup, where HyperCard would freeze upon playing certain sounds.

One minor note: We have never been able to get "phone dialing" (DTMF, or Touch-Tone™ tones) working in HyperCard, whether we're on a real Mac or an ST! Any ideas?

SERIAL DRIVER IMPROVED: Several obscure serial (modem) calls (csCode=13, for example) have been added to Spectre. Things like XON/XOFF support have also been bulletproofed. While very few programs really use these, doing this fixes bugs in a few programs that had trouble with modems, for instance, CDC Connect™. As a general rule, if it didn't work before, give it another try; many good things have happened to help the few programs that used to fail.

RESTART FINALLY WORKS: The *very last* Mac menu item that used to not work, "Restart", is now fixed. (The "Restart" after "Shutdown" already worked). This was mighty tricky, since Restart tries to do a RESET on the Atari (very much like pressing the Reset button in the back of the Atari!).

Unfortunately, a 68030 resets a little differently, so this item won't work on a TT or the Gadget's 68030 (yet).

Note also CTRL-ALT-DEL does a "Reset" back into Mac mode directly (like pressing a Mac's RESET button), and that CTRL-ALT-(right side) SHIFT-DEL resets you to ST mode. Just another handy feature of 3.0.

64K ROM SUPPORT GONE: We realize no one cares, but in the interests of thoroughly documenting Spectre 3.0, we removed 64K ROM

support. The thing was, we were running low on memory space (particularly in 832K mode, on a 1 meg machine), for all the new stuff in Spectre we'd added, and *something* had to go in the Spectre code to make room. Turns out there were many places where there was code whose only purpose was 64K ROM support; it took up a lot of room. No more.

We've seen perhaps 2 or 3 users with 64K ROMs in Spectre in the two years we've had it out, and in all honesty, in most Spectre releases, 64K ROMs have not worked. (The 64K ROMs have many bugs and limitations; that's why the 128K's are so much better.)

CONCLUSION: This wraps up our description of Spectre 3.0 and all the neat new stuff it features. As you can see, Spectre 3.0 is Spectre for the 90's; it provides us with a very broad, stable base in which to improve Spectre further, and makes using Spectre a lot easier for many users; we particularly like the overseas language and keyboard support. From our point of view, there are many changes you don't even see, including code structuring and redesign that was badly needed; Spectre was a "bottom-up" project by necessity, but such things as the many different keypresses to activate various functions were growing hard to remember. We also had to perform "maintenance" upgrades, such as supporting TT and 68030 SST, the new Atari hard disk formatter, and so forth.

Ultimately, the test of our 3.0 software is... if you like it. Drop me a line and tell me, will you? I'm online; CompuServe: GO ATARIVEN or drop a line to 76606,666 and GENIE: GADGETS, or Email to DaveSmall.

Classifieds

SYSTEM HEAP SIZE: We urge every Spectre user (and heck, every Mac user!) to look at, and reset, their "System Heap Size" with the utility provided on our newly redone Mac Public Domain/Shareware Disk (and online everywhere under a variety of names - HeapCheck, HeapSize, etc.) Turns out Apple's "Installer" commonly sets the System Heap way, way too low (like to 80K when it

should be around 400K, in my case!) This causes all sorts of crashes with MultiFinder™ and many other programs, particularly when printing, and especially if you use lots of CDEVs and INITs, which take up System Heap space.

SPECTRE DEMO CONTEST: We are looking for a Spectre Demo that runs on an Atari so we can send it to interested people, and you can help us out! See page 2.

UPDATED FILES: The following files are either new or have been updated for Spectre 3.0: STARTUP.PS, Direct.ACL (for Asynch LaserWriter), Transverter 4.6, and DCFormatter.

ULTRAScript GCR: A lot of you have been inquiring about UltraScript for the Mac, whether we would sell it, or if it works. All I can tell you is that we have been told that it works with the Spectre, but not with the SLM804. Since that is an Atari specific printer, it makes sense (sort of).

SLM605 = SLM804: Atari has announced a replacement for the SLM804 called the SLM605. From what we have been told, they should operate identically.

NEW DOUBLE-PAGE IV: Doug has a new version of Double-Page which has better error handling, custom fonts, and other neat features. You can order (or upgrade) it through Gadgets for \$10.00.

GENIE "DRAWING": We are thinking about having a drawing in the Gadgets RT on the first Tuesday of each month, in order to whip up some excitement!

BAD PALS: This was yet another memorable Summer; "raving idiot chip supplier" (as Dave puts it) formed a conspiracy with Murphy, and zinged us. Although we spot test each new batch of GCRs, we had an amazing number of bad GCRs go out the door to unsuspecting customers before we finally figured out what was wrong. The PAL is supposed to have a little program inside it to tell the GCR how to read Mac disks - *but these PALS were never programmed by the chip supplier.* We spent all summer doing repairs. *sigh*

Ordering Info

Spectre 3.0: This upgrade is for both Spectre 128 and Spectre GCR owners. Spectre 3.0 should be ready for release in mid-December. If you order the upgrade, you will get the 3.0 software and a manual supplement for the low, low price of \$20.00. We are taking orders for Spectre 3.0 starting 12/15/90.

If you purchased a Spectre GCR after 10/1/90, and have your receipt, you can get a free upgrade to Spectre 3.0. Just be sure to send a copy of your receipt with the enclosed order form (or registration card, if you haven't sent it in yet).

MegaTalk is for Mega ST owners only; it plugs into the Mega expansion port. We expect MegaTalk to be released in March 1991. (It has to go through FCC Certification, now that the SCSI port is in.)

MegaTalk retails for \$299.95, and we will start taking orders 12/15/90. As usual, registered owners will have priority. Please do not send any money for MegaTalk with your order; it will not affect your place in the order queue.

If you are planning on paying with Visa or MasterCard, please fill out the number and expiration date on the order form now, so we can charge it when we are ready to ship. (Also, make sure the expiration date is *after* 3/91.) If you plan on paying by check, mark the appropriate box on the order form, and we will notify you later when to send the check.

68030 SST: The SST is also for Mega ST owners only. The Basic Package consists of the SST with *no* 68030, coprocessor or SIMMs, and costs \$599. One of the three Option Packages A, B, or C, is required to operate. They are:

- A: 16mhz 68030 \$200;
- B: 16mhz 68030 and 4 1-meg SIMMs \$460; and
- C: 33mhz 68030, 68882 coprocessor, and 4 1-meg SIMMs \$800.

We will require a deposit of 50% of the total purchase price in Feb. 1991,

ORDERING INFO FROM PAGE 13

and the balance before shipping. Please do not send any money for the SST with the order form. If you are paying by credit card, please fill out the number and expiration date on the order form now. If you plan to pay by check, we will notify you when your payments are due.

In general, our payment requirements are pretty much run of the mill. We accept Visa/MasterCard, business or personal checks (in US dollars only), and we don't do COD's.

Release Dates

Spectre 3.0
December 1990

MegaTalk
March 1991

68030 SST
April 1991

Compatibility List

Here is the revised compatibility list for Spectre 3.0. Please Note that if you don't see your favorite program listed, it doesn't mean that the program doesn't work; it just means we haven't tested it yet.

If there is an ‡, it means that the program requires a MegaTalk board to operate properly.

Application	Version	Comments
Aatrix Payroll	3.02	Works
Access PC	1.0	Works
Acta	2.0	Works
Adobe Separator	2.0	Works
Adobe Streamline	1.0	Works
Adobe Type Manager	1.01	Works
Adobe Type Manager	1.2	Works
Adobe Type Manager	2.0	Works
Adobe Type Reunion	1.0	Works
After Dark	1.0	Works
After Dark II	2.0	Works
Ancient Art of War	--	Protected
Apple File Exchange	1.1	Problems
Apple File Exchange	1.1.4	Works
Art Importer	2.0	Works
AutoMac III	1.0	Works
Back to Basics Accounting	--	Locks Up
Balance of Power	1.03	Protected
Battery Pack	1.1	Unstable
Beyond	1.6	Works; ‡
Business Class	1.0	Works; 2meg
C.A.T.	1.01	Works
Cadd Level I	1.0	Works
Calculator Const. Set	1.0	Works
Calendar Creator	1.0	Works
Calendar Maker	3.0	Works
Canvas	2.1	Works
Chessmaster 2000	1.0	Protected
Clariscad	1.0v1	Works
Clipper	2.0	Works
ColorPrint	2.03	Works
Comic Strip Factory	1.6	Works
ComicWorks	1.0	Works
Complete Undelete	1.01	Works
ConcertWare	--	Works; ‡
Copy II Mac	7.0	Locks Up
Crickit Draw	1.1.1	Works
Crickit Graph	1.1	Works
Crickit Paint	1.0	Works; unstable
Crickit Presents	1.0	Works
Crystal Paint	1.02	Works
Crystal Quest	2.2c	Works; Unprotected
Curator	1.04	Works
Dark Castle	--	Locks Up
Data Base Builder	1.0	Works
Day Keeper	1.41	Works; crashes on QUIT
DBASE Mac	1.0	Works
Deadline	--	Works
Decision Map	1.0	Works
Deja Vu	1.03	Works; Unprotected
Delta Graph	1.0	Works
Design	2.0	Works
Design Scope	1.14	Works
Design Studio	1.01	Works
Design Works	1.11	Works
DeskDraw	2.0	Works
DeskDraw	3.0	Works
DeskPaint	2.0	Works
Digital Darkroom	1.0	Works; 2meg
Digital Darkroom	1.1	Works; 2meg
Dimensions	1.15	Works
Dinner at Eight	1.03	Works
Disinfectant	1.7	Works
Disinfectant	2.2	Works

Rumour Control: Next on the Agenda...

The advent of the TT machine will bring about Spectre 3.1, which will further support some TT features. Reported specifications on the TT include FastRAM of many megabytes, and we'd like to make as much of that as possible available to users in Mac mode. The TT also includes Appletalk/LocalTalk, true SCSI (is this beginning to sound like MegaTalk?), the ability to completely solve the zerostore problem to begin with via the MMU, high speed with a 32 Mhz clock rate, high density (1.44 meg) floppies, and more!

While we know Spectre 3.0 runs on the TT (and fast, too!), we want to support these added TT features to make the Spectre more powerful with the TT. Hence we're planning on adding many of these features to 3.1. (When? Well, a lot is going to depend on when we can get a final model, 32 Mhz TT to do testing on!) In the meantime, Spectre 3.0 will give you plenty of respectable performance on a TT, even though it doesn't yet support all the nifty features possible.

Apple's System 7 is waiting on the wings (and waiting, and waiting...). We'll make a special effort to support it. It's important to us to work on every System and Finder that Apple ever released; we are 100% right now.

We'd like to make Mac CD's work on the Atari CDAR CD unit. We've

made some efforts in this direction and they show promise, but it's not just there yet.

We also want to support 1.44 meg disks; as you'll see, we've already reserved keyboard slots for them. DreamPark development makes a 1.44 meg floppy for the ST, and the TT reportedly will be able to use high density floppies as well. We're working on that, too...

MegaTalk opens up a number of neat software improvements to do, from a high speed, inexpensive ST network (possibly we can negotiate to use already-written net software?), to supporting whatever Appletalk network is settled on for the TT (the TT has an Appletalk port already in it), a SCSI driver for ST-mode hard drives (which would eliminate the need for an Atari "host adaptor" - just go buy some cheap Mac hard disk and plug it in!).

We think it would be a great thing to be able to instantly switch, via one "hotkey" press, between Atari, Spectre/Mac, and IBM modes. The advent of higher memory machines will ease this process, as will an MMU in a 68030, but it's still possible with a regular ST.

We have other products for the Atari we're working on as well, that we can't talk about at this point in time (we hate giving the competition ideas). You'll be seeing them. We have no intention of leaving the Atari market; the people that have purchased Spectre 128 and GCR have provided us funding to keep developing ST products.

Thank You for
Your Support!

Disk Express	1.10	Works	KeyMaster	1.0	Works	Minicad Plus	1.0	Works
Disk Express II	2.00	Works	Laser FX	1.0	Works, unstable	Model Shop	1.0	Works
Disk First Aid	1.4.1	Works	Leather Goddess/Phobos	--	Works	More II	2.0	Works
Diskfit	1.4	Works	Letra Studio	1.0	Works	Mouse Stampede	1.0	Works;
Disk Ranger	3.0	Works	Letra Studio	1.5	Works			Unprotected
Disk Tools III	2.0	Works	Lightspeed Pascal	1.0	Works	MS Basic	2.0	Works
DiskTop	4.0	Works	Lode Runner	1.0	Works;	MS Chart	1.0	Works
DMAC III	1.07	Works			Unprotected	MS File	2.0	Works
Dollars and Sense	4.1c	Works	LogicWorks	1.3	Works	MS Fortran	2.2	Works
DOS Mounter	1.2	Works	LogiMac	1.21	Works	MS QuickBasic	1.0	Works
Double Helix II	3.0	Crashes	LookUp	1.0a	Works	MS Word	3.02	Works
Dreams	1.0	Works; Hard	Mac 3D	2.1	Works	MS Word	4.0	Works
		Disk	Mac 68000 Dev. System	--	Works	MS Works	2.0	Works
Dungeon Revealed	1.1	Works	Mac-A-Mug	2.0	Works	MS Write	1.0	Works
Easy 3D	1.0	Locks Up	Mac-A-Mug Pro	1.0L	Works	MSFL-Football	2.0	Works
Electric Checkbook	--	Protected	Mac Atlas	--	Works	Multi-Ad Creator	1.0	Works
Enchanted Scepters	--	Protected	MacAuthor	1.2	Works	My Disk Catalog	2.1B	Works
Epstart	2.5	Works	MacBillboard	4.01	Works	My Disk Labeler	1.9.1	Works
Eureka	1.0	Works	MacBlob	--	Works	NFL Challenge	1.2	Works
Excel	1.5	Works	MacCad PCB Designer	3.1	Works	Nisus	1.01	Works
Excel	2.2	Works	MacCalc	1.2d	Works	Norton Utilities	1.0	Works
Expressionist	2.03	Works	MacCalligraphy	2.0	Works	Nupaint	1.04	Works
Factfinder	1.2	Works	MacChallenger	1.0	Works	ODS/Consultant	1.6	Works
Fastback	1.02	Won't work	MacCheckers/Reversi	--	Works	101 Excel Macros	--	Works
Fedit Plus	1.1	Works	MacCoach	1.0	Works	One On One	--	Protected
Ferrari Grand Prix	--	Protected	MacDasher	1.52	Works	On Que	1.3	Works
Finale	1.0	Works; ‡	MacDraft	1.1	Works; 6.0/4.2	OpenIt	1.0	Works
Filemaker 4	4.0	Works			Required	Orbiter	--	Works
Filemaker Plus	2.1	Works	MacDraft	1.2b	Works	OverVUE	2.1d	Won't Print
Television IV	1.0	Works	MacDraw	1.9.5	Works	Panorama	1.5	Works
Indswell	1.0	Works	MacDraw II	1.1	Works	Pagemaker	3.02	Works; Hard
1ST Base	2.0	Works	MacEnhancer	2.65	Works			Drive
Flight Simulator	1.0	Protected	MacGolf	3.0	Works	PageMaker	4.0	Works
Focal Point II	1.0	Unstable	MacGolf Classic	3.0	Works;	Paper Plane Const. Kit	--	Works
Fokker Triplane	1.0	Protected			Unprotected	Patton VS. Rommel	--	Protected
Fontastic Plus	2.0.2	Works	MacInTax	'89	Works	Pensate	1.1	Works
Fontographer	1.5	Works	MacInTax	'90	Works	Personal Ancestral File	1.0	Works
Fontographer	3.0	Works	MacInUse	1.0	Works	Persuasion	2.0	Works
Font/DA Juggler	2.0	Locks Up	MacJack	1.0	Works	Perplex	1.0	Works
Font/DA Juggler Plus	1.03	Works	MacLabeler	2.2	Locks up	Photon Paint	2.7	Works
4th Dimension	2.0.4	Works;	MacLightning	2.0	Works	Pinball Construction Set	2.5	Protected
Font Studio		68030/FPU	MacMATLAB	2.03	Works	Picture Base	1.0	Works
			MacMoney	2.03	Works	PixelPaint	1.0	Mac II Only
Fox Base +	2.0	Works	MacNifty	2.097	Works	Plot It	2.0	Works
FreeHand	1.0	Works	MacOffice	--	Works	Pool of Radiance	--	Works
FreeHand	2.0	Works	MacPaint	1.5	Works	Poster Maker Plus	2.5	Works; 6.0/4.2
FreeHand	2.02	Works	MacPaint	2.01	Works			Required
Front Desk	1.1	Works	Mac PC Tools Deluxe	--	Most Work	Power Draw	2.0	Works
Full Paint	1.0	Works	MacPerspective	3.01	Works	PowerStation	1.1	Works
Full Write Professional	1.1	Works; 2 meg	MacPlaymate	--	Works	Power Math	1.0	Protected
		Hard Disk	MacPlot	1.5	Works	PowerPoint	2.0	Works
Gato	1.42	Protected	MacProject	1.2	Works	Print Shop	1.3	Works
General Ledger: AMS	2.0	Works	MacProof	3.0	Works	Printer Interface III	--	Works
General Ledger: Symp.	1.1	Works	MacPublisher	1.25	Works	Printworks	3.2	Works
GeoQuery	1.01	Works	MacSlots	--	Works	Prodigy	1.6.9	Works
Gofor	1.0	Works	MacSpec	1.3	Works	Professional Composer	2.0	Works
Gofor	2.0	Works	MacSpell+	1.07	Works	Profit Stalker II	1.2	Works
Grammatik	2.0	Works	MacSpin	1.0	Works	Pro 3D	1.0	Locks Up
Graphic Works	1.0	Works	MacSpin	1.1	Locks up	PFS File/Report	A.03	Works
Graphindex	1.01	Works	MacStickers	1.0	Works	PFS Rescue	A.00	Works
Grappler LS	1.0	Works	Mac the Knife Vol. 1 & 2	--	Works	Picture Book	3.0	Works
Guide	1.0	Works	MacTerminal	2.2	Works	Plus+	1.1	Works; 2meg
Habadox	1.1	Works	MacTools	6.3	Works except	Psion Chess	--	Works
Habaword	1.8a	Works			Disk Copy	Publish It	1.10	Works
Hand Off	1.0	Can't find config.	Mac Vegas	1.0	Protected	Pyro II	3.3.1	Works
		file	Mac Wars	--	Protected	Pyro	4.0	Works
Hand Off	1.1	Works	MacWrite	5.01	Works	Quark Xpress	2.0	Works
Hand Off II	2.0	Works	MacWrite II	1.0v1	Works	Quark Xpress	2.12	Works
Hard Ball	--	Protected	MacZap	5.1	Works except	Quark Xpress	3.0	Works
Harrier Strike Mission	--	Protected			Copy	QuarkStyle	1.0	Works
Harrier Strike Mission II	--	Locks Up	Make Millions	--	Protected	Quarter Staff	2.0C	Works
Hidden Agenda	1.0	Works	MapMaker	1.0	Works	Qued/M	2.07	Works
Hitchhikers Guide	--	Protected	MasterTracks Pro	4.1.2	Works; ‡	Quick Basic	1.0	Works
Home Accountant	1.03	Works	MasterType III	--	Works	Quick & Dirty Utilities	1.6	Most Work
Hunt for Red October	1.0	Works	MasterType IV	--	Works	QuickLetter	1.0	Works
HyperCard	1.2.1	Works	Math Blaster	1.0	Protected	Quick Keys	1.2	Works
HyperCard	1.2.2	Works	Mathematica	1.03	Works	Quicken	1.5	Works
HyperCard	1.2.5	Works	Math Type	1.01	Works	Ragtime	1.0	Works
HyperCard	2.0	Works	MaxRAM	2.5	Crashes	Ready Set Go	4.5	Works
HyperDA	1.2	Works	Mazewars+	1.1	Locks Up	Ready Set Show	1.0	Works
Icon Factory	1.0	Works	McMax	'87	Works	Record Holder Plus	3.0	Works
Illustrator '88	1.9.3	Works; 2meg	Mega-Filer	1.01	Works	Redux	1.01	Works
Illustrator '88	1.9.5	Works; 2meg	MegaMax C	2.1	Works	Reflections for the Mac	--	Works
Image Studio	1.5	Works	Mega-Merge	2.1	Works	Reflex	1.01	Works
Inspiration	2.0	Works	MenuFonts II	2.0	Works	Reflex Plus	1.0	Works
Jazz	1.0	Protected	MergeWrite	1.1	Works	Sands of Fire	1.0	Works
Jetlink Express	1.01	Works	MGM Station	2.09	Works	Sargon IV	1.0	Works;
Journey	--	Works	Microphone II	3.0	Works			Unprotected
Karnov	--	Works	MindWheel	--	Works	Sentinel	1.0	Works
KaleidaGraph	1.0	Works	MindWrite	2.1	Works	Scrapmaker	2.0	Works

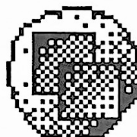
Shanghai	2.0	Works;	System/Finder	3.2/5.4	Works	Vision	1.02	Works; ‡,
Shadowgate	1.0B1	Unprotected	System/Finder	4.0/5.4	Works	Wet Paint	--	Unprotected
Sidekick	2.0	Protected	System/Finder	4.1/5.5	Works	White Knight	11.0	Works
		Works; won't	System/Finder	4.2/6.0	Works	Wings	1.1	Works
Silicon Press	1.1	print	System/Finder	6.0/6.1	Works	Word Finder	2.0	Works
		Works; won't	System/Finder	6.0/6.1	Works	Word Maker	1.0.1	Works
SkyTravel	1.0	print	System/Finder	6.0.1/6.1	Works	Word Perfect	1.0.2	Works
Smart Alarms	2.2C	Works	System/Finder	6.0.2/6.1	Works	Works Plus Spell	1.0A	Works
SmartForm Assistant	1.0v1	Works	System/Finder	6.0.3/6.1	Works	Works Plus Command	1.1	Works
SmartForm Designer	1.0v1	Works	System/Finder	6.0.4/6.1.4	Works	World Builder	1.1	Works
SmartScrap	2.0	Works	System/Finder	6.0.5/6.1.5	Works	World Class Fonts	--	Works
Smash Hit Ratchetball II	1.0	Works	System/Finder	6.0.6/6.1.6	Works	WriteNow	2.0	Works
		Works;	System/Finder	6.0.7/6.1.7	Works	WriteNow	2.2a	Works
		Unprotected	Tellstar	1.0	Works	XLisp	1.2	Works
Snap	1.0	Locks Up	Tempo II	1.0	Works	Xtrec Mac	1.0	Works
Sorcerer	--	Works	Terrapin Logo	--	Works	Z-Basic	4.0	Works
Spellbreaker	--	Crashes	Tetris	--	Works	Zing	1.0	Works
Spelling Coach Pro	3.01	The Whittess	The Right Word	3.0	Works	Zork I	--	Works
Spellswell	2.0f	Works	Thinkfast	1.0	Works	Zork II	--	Works
Squire	--	Works	ThinkTank 512	1.30	Works	Zork III	--	Works
Station Fall	--	Works	Thunder II	1.0	Works	Zork Zero	--	Works
Statview 512+	1.0	Works	TK Solver	1.5R	Works			
StatWorks	1.1	Works	TopDesk	1.3	Works; ‡			
Stella	1.3	Works	TOPS	3.0	Works			
Stepping Out II	2.0	Works	Trapeze	2.1	Works			
Strategic Conquest	1.1	Protected	Train Set Simulator	--	Works			
Studio/1	1.0	Works	Transylvania	--	Works			
Sub Battle Simulator	--	Works	Turbocharger	2.0D	Works			
Suitcase II	1.2.5	Works	Turbo Pascal	1.1	Works			
SUM II	2.0	Works; except	][In A Mac	--	Works; Crashes			
		Quickcopy			on Quit			
Sun Clock	1.4	Works	Tycoon	1.0	Works			
Super 3D	2.0	Crashes	Type Align	1.0	Works			
SuperCard	1.0	Works; 2meg	Typing Tutor IV	1.0	Works			
Super Glue II	2.0	Works	Ultima III	1.0	Protected			
Super Paint	1.1	Works	Uninvited	--	Works;			
Super Paint	2.0	Works			Unprotected			
Surgeon	1.5	Works	Vaccine	1.0.1	Works			
Swivel	1.0	Works	Vantage	1.0	Works			
Symantic Utilities	1.0	Most Work	Versaterm Pro	2.0	Works			
System/Finder	1.1g	Works	VideoWorks II	2.0	Works			
System/Finder	2.0/4.1	Works	View to a Kill	1.0	Protected			
System/Finder	3.2/5.3	Works	Virex	2.3	Works			

Business Hours

We answer the phone Monday, Wednesday, Friday 8:30am - 2:30pm Mountain Time. Our fax machine (303) 791-0253, answers all the time!

We won't be answering the phone from 12/24/90 to 1/14/91, in order to catch up on all those end-of-the-year things like inventory (not to mention Christmas). Please help us out; send your order by fax or mail.

Gadgets by Small, Inc.



40 W. Littleton Blvd., #210-211 • Littleton, Colorado • 80120

Phone: (303) 791-6098 • Fax: (303) 791-0253